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Woburn

Health Data Analysis
1969 – 1978

December 21, 1979

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Prepared by

Milton Kotelchuck, Ph.D.
Director, Division of Health Statistics
Office of State Health Planning

Gerald S. Parker
Assistant Commissioner for Environmental Health

SUMMARY

The following report is an initial analysis of available data on the health status of Woburn, especially as it relates to cancer death rates.

The Department of Public Health has ascertained that Woburn's cancer death rate is higher than what should be expected considering the age and sex characteristics of its residents. However, we have not found data that associate a cause and effect relation between the Woburn cancer death rate and any specific cause.

The Department has also determined that although the statistics are higher than what we would expect, they do not represent an epidemic situation. However, they do present some serious questions that need answers which we intend to pursue.

The Department of Public Health will work with the city of Woburn to further analyze possible health data in order to pinpoint specific health problems within Woburn. Public health staff has already contacted the U.S. Centers for Disease Control (CDC) and is receiving CDC's consulting assistance. In addition, we will continue to cooperate with the Department of Environmental Quality Engineering (DEQE) in securing answers to the environmental impact questions of the Woburn public health.

It is difficult even under the best of circumstances to be able to pinpoint the cause (or even a major risk factor) of a cancer. The death certificate is lacking in the richness of information needed for determining causal links. In particular, the death certificate lacks complete information on residential history, occupational history, smoking habits, exposures to known carcinogens, etc. The death certificate can be used to provide leads to potential causal factors. More definitive epidemiological analyses are necessary before a linkage can be made between cancer and a known life experience (an exposure).

HEALTH DATA ANALYSIS, 1969 – 1978

Woburn Overall Cancer Rate

Based upon the statewide experience with cancer deaths from 1969 – 1978 for all causes (International Classification of Diseases categories 140 – 199, Malignant neoplasms), one would expect that Woburn would have had 503.5 cancer deaths. In fact, Woburn had 569 cancer deaths, from 1969 – 1978, according to the legal death certificates on file with the Registry of Vital Events, Department of Public Health. This is a statistically significant number of cancer deaths. Woburn's rate of cancer is 13.0% greater than expected considering the population's age and sex characteristics.

It should be noted that these figures are based upon death certificates and that it is critical that each cancer death be verified. Confirmation of the accuracy of the death certificate is an important preliminary activity prior to any further detailed investigation. Misclassifications of residence or cause of death might well change the nature of our conclusions.

Cancer deaths in Woburn appear to be increasing. However, it is only during the last five-year period that cancer deaths were higher than what should be expected. During 1974 – 1978, 307 cancer deaths occurred in Woburn when only 248.0 were expected; 23.0 more deaths than expected. By contrast, in the earlier 5-year phase, 1969 – 1974, 262 cancer deaths occurred when 255.5 deaths were expected.

Data on cancer death by town prior to 1969 is difficult to obtain. Such information is not recorded in a computer-retrievable manner and is coded under different categories than presently used. There does not appear to be some prior fluctuations in cancer deaths in Woburn. In 1964 – 1968 there were 271 cancer deaths of all causes and in 1959 – 1963 there were 207cancer deaths. Expected figures are not available.

Surrounding Communities

Woburn has one of the higher cancer rates (ratio of observed to expected deaths) among Massachusetts communities. Its cancer rate is within the group of larger Massachusetts communities that has the highest cancer rates. More importantly, for the 1974 – 1978 period,

Woburn had the highest rate of cancer for the 70 largest Massachusetts communities (population greater than 20,000).

Within the next several months, the Department of Public Health will publish details profiles of leading causes of death, including cancer, for all Massachusetts communities. These profiles will include both actual and expected deaths by community. The relative ranking of communities can be determined from these profiles.

Specific Cancer Types

Woburn has significantly elevated cancer rates for only a limited number of cancer types. For the years 1974 —1978, Woburn had elevated rates of bronchus/lung, breast, prostate, kidney, and liver cancers. For the 10-year period, only kidney and liver cancers were significantly elevated. Many major cancer types were not elevated – in particular, large intestines, pancreas, ovary, stomach, brain, skin, uterus, bladder, esophagus, and rectum.

Childhood and young adult leukemia deaths are not significantly elevated in Woburn during any of the past 10 years, although available health data do not present a clear picture on the overall leukemia health rates. Although during the 1969 – 1973 period, there was a statistically significant elevation of leukemias in Woburn (18 leukemia deaths occurred when only 10.9 were expected), there was no statistically significant elevation for 1974 – 1978. In fact, leukemia deaths decreased to 12 deaths. For the entire 10-year period, leukemia deaths were elevated, but not at a significant level.

Age and Sex Distribution

Cancer rates are higher than expected among all ages in Woburn. There is, however, a statistical trend towards increasing rates among the younger (35 – 54) age groups. Males and females in Woburn have relatively equal elevated levels of cancer deaths. For the 1974 – 1978 period; males have a 23.0% elevated rate (observed to expected cancers) while females have 24.6% elevated rates of cancers.

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Occupational Factors

An examination of occupations listed on the death certificates reveals no noticeable pattern of employment that could account for Woburn's cancer rates. There were no striking patterns of employment even for specific types of cancer. Moreover, the equality of elevated cancer rates for males and females in Woburn is not suggestive of an occupational etiology since the majority of women who died of cancer were housewives.

However, under no circumstances can this examination be seen as definitive as occupational information on the death certificate is quite limited. Only the principal occupation is listed, and not the needed detailed complete occupational history.

Woburn Water Supply

This potential causal link cannot be determined at this time. An examination of nearby or contiguous communities having various types of water supplies (MDC; non-MDC uncontaminated; and non-MDC contaminated) failed to show any differential pattern of elevated cancers.

To fully examine the relationship between cancer and potential water contamination, it is critical to map out the specific pollutants in question, to determine who was exposed and for how long to the pollutants. Only with that information can a linkage to health sequels be made. The Department of Public Health is actively working with the DEQE to investigate this issue.

Airborne Contaminants

An examination of communities contiguous to Woburn fails to reveal any pattern of elevated cancer rates. This suggests that airborne contaminants do not play a role in Woburn's elevated cancer rates. Surrounding towns do not appear to have Woburn's pattern of cancer deaths. This is obviously a preliminary analysis, which can be examined more thoroughly when environmental hazards are more fully identified.

Clusters

Clustering, while a popular and frequently used concept, has no definitive epidemiological definition. Determining that an area has a cluster of cancers is an inexact science at best. Three specific types of cancers of relevance to Woburn were examined for 1969 – 1978 – liver, kidney, and childhood leukemia. No strong pattern of clustering of deaths was noticed.

Childhood and Birth Factors

Based on an examination of birth certificate information available to the Department of Public Health, the characteristics of Woburn's births for 1969 – 1977 are similar to the statewide pattern. 6.85% of Woburn's births are low-birth weight babies (under 2,500 gms. or 5.5 lbs), which is almost exactly the statewide rate. There is also no statistically significant increase in infant mortality in 1969 – 1977, above the expected infant mortality (51 actual infant deaths, 42.4 were expected, not a significant difference). For 1974 and 1975, fetal deaths in Woburn are somewhat lower than would be expected from the statewide experience (8 actual fetal deaths, 9.1 expected fetal deaths).

From 1969 – 1977 there is likewise no significant increase in congenital malformation found in Woburn infants (49 reported congenital malformations versus 42.3 expected based on a statewide average; not a significant difference). In sum, no noticeably significant elevated pattern of fetal damage is seen for Woburn's newest residents.

Cancer Mortality as an Indication of Cancer Incidence

The Department of Public Health does not have incident or morbidity data on cancer that is available to the Department. There is no formal mechanism in Massachusetts for collection of comprehensive population based data on cancer incidence. For cancers such as lung cancer with high mortality experiences, mortality profiles reflect accurately cancer incidence; for cancers such as skin cancer with low mortality, mortality data does not present a complete picture. Under any circumstances, mortality is the most widely used and readily available measure of health status. It is the best index presently available.